

## Area Screening



Is Further Investigation Needed?

## Initial Field Investigation



- First Entry Point to a Remediation program
- Also May Be the First Exit Point
- Determines Whether Site Characterization is Necessary
- Default Methods Are Tested and Effective

## Developing a QAPP



- 5 Basic Parts
  - DQOs
  - HASP
  - SAP
  - QA/QC
  - DQA
- Procedures in Tech Guide and From Chemistry Section

## Types of Environmental Media

- Surface soil
  - Top Six Inches
- Subsurface Soil
  - From Six Inches to the Water Table
- Ground Water
  - The Saturated Zone
- Nondefault
  - Other

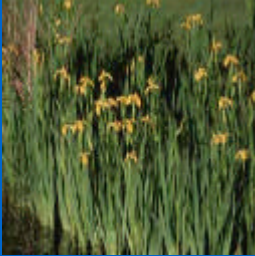
## Chemical vs. Petroleum Sites

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Chemical site           <ul style="list-style-type: none"> <li>– Less Information About the Release</li> <li>– May Include Many Chemicals</li> <li>– Screening and Nature and Extent Determination Are Separate processes</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Petroleum Site           <ul style="list-style-type: none"> <li>– More Information Available About the Site and Products Released</li> <li>– Chemicals Are Virgin Fuels or Oil</li> <li>– Screening and Nature and Extent Determination Are Combined</li> </ul> </li> </ul> |
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## Classifying Site Areas Correctly

- Three Classifications
  - Areas Unlikely To Be Contaminated
  - Areas Known To Be Contaminated
  - Areas That May Be Contaminated
- Correct Classification Is Essential To Investigation and Closure
- Areas Unlikely To Be Contaminated Are Generally Not Sampled

## Background Sampling

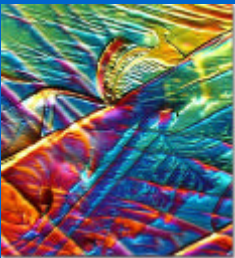


- Are Contaminants In the source Area Naturally Occurring?
- Samples From An Uncontaminated Area
- Random Sampling Within the Area
- If CV Exceeds 1.2 - Further Investigation

## Other Considerations

- Preferential Pathways
- Surface Water Erosion and Deposition
- Sediments
- Environmentally Sensitive Areas
  - Screen For Environmental Impacts
  - Is in-Depth Investigation Warranted?
  - Is This Really a default?

## Sampling Procedures



- Surface Soil Nonvolatiles
  - Max or Chen Test
- Surface Soil Volatiles
  - Chen Test
- Divide Into Quadrants
  - Random Samples Taken From Each Quadrant

## Max and Chen Tests

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|--|--|
| <ul style="list-style-type: none"><li>• Max Test - Nonvolatiles</li><li>• 1. Divide Source Area</li><li>• 2. Collect 8 Composites</li><li>• 3. Compare Composite Values to Twice the closure Level</li></ul> | <ul style="list-style-type: none"><li>• Chen Test - Volatiles or Nonvolatiles</li><li>• 1. Divide Source Area</li><li>• 2. Three Discrete Samples Per Quadrant</li><li>• 3. Perform Comparison Calculations and Evaluate</li></ul> |
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## Subsurface Soil Sampling



- Selecting Sample Locations Has Two Parts:
  - Borings Are Located In the Areas Most Likely To Be Contaminated
  - Samples From the Boring Are Taken Based On Stratigraphy Or Field Instruments

## Volatiles vs. Nonvolatiles

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Volatiles<ul style="list-style-type: none"><li>– Three Borings In Areas of Highest Suspected Concentration</li><li>– Screen Each Two Foot Soil Increment with a Field Instrument</li><li>– Take the Sample From the Increment With the Highest Reading</li></ul></li></ul> | <ul style="list-style-type: none"><li>• Nonvolatiles<ul style="list-style-type: none"><li>– Three Borings In Areas of Highest Suspected Concentration</li><li>– Evaluate the Stratigraphy of the Soil Core</li><li>– Take Samples Based Upon the Stratigraphy of the Soil Core</li></ul></li></ul> |
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## Evaluating the Results - PECs



- Volatiles
  - Average the Three Highest Readings and Compare To the Closure Level
- Nonvolatiles
  - Average All Samples With Detected Concentrations and Compare To Closure Levels

## Ground Water Screening

- Minimum of One Sample In Area of Suspected Highest Concentration
- Generally Will Have One Sample From Each Boring
- There Are Two Exceptions To the Requirement To Have Ground Water Samples
- Any Detection Requires N&E Investigation

## Judgmental Screening



- Minimal Criteria Are In the RISC Manual
- Contaminated Areas Are Not Always Obvious
- Each Sample Is Compared to the Closure level